

Claims

1. A mobile terminal having a broadcast program receiving function in addition to a communication function, comprising:

5 a memory;

a recording unit operable, when playback of a broadcast program being received is disabled by the communication function, to record the broadcast program in the memory as broadcast data, the communication function having priority over the playback;

10 and

a playback unit operable, when the disabled playback changes to be enabled, to play back the broadcast data.

2. The mobile terminal of Claim 1, wherein

15 the playback is disabled either on receipt of an incoming call having priority over the playback, or on commencement of a call, and

the disabled playback changes to be enabled when the call ends.

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3. The mobile terminal of Claim 2, wherein

the playback unit includes a first playback subunit operable to receive a specification of a playback speed from a user and play back the recorded broadcast data at the specified 25 playback speed.

4. The mobile terminal of Claim 3, wherein

the first playback subunit includes:

a standard playback subunit operable to play back the recorded broadcast data at a standard playback speed equal to an original playback speed of the broadcast program; and
5 a high-speed playback subunit operable to play back the broadcast data at a playback speed higher than the standard playback speed.

5. The mobile terminal of Claim 4, wherein
10 the first playback subunit further includes a special playback subunit operable to perform slow playback and reverse playback during the playback of the recorded broadcast data.

6. The mobile terminal of Claim 5, wherein
15 the high-speed playback subunit includes a calculation subunit operable to receive a remaining playback time period from the user, and calculate, based on a predetermined formula, a playback speed indicating a number of frames to be played back per second, and
20 the high-speed playback subunit reads the broadcast data from the memory, and plays back the read broadcast data at the calculated playback speed.

7. The mobile terminal of Claim 6, wherein
25 when another incoming call is received during the playback or when another call starts, the playback unit interrupts the playback,
 the calculation subunit recalculates a playback speed based on the predetermined formula, and

an output subunit outputs the recorded broadcast data from an interrupted part, to a monitor at the re-calculated playback speed.

5 8. The mobile terminal of Claim 7, wherein
the predetermined formula used by the calculation subunit
is

[formula 1]

$$x_n = x_0 + \frac{1}{t_R} \sum_{i=1}^n (x_0 (t_i + p_i - 1) - x_{i-1} p_i - 1), \text{ where}$$

10 x_n is a reading speed at which the output subunit reads the video data from the memory after an end of a number of n calls [frame/sec],

15 x_0 is a number of frames to be played back per second at the standard playback speed, i.e. a reading speed at which the video data to be read from the memory [30 fps],

t_R is a specified remaining high-speed playback time period (a chasing playback time period) [sec],

t_i is a duration of an i-th call [sec], and

20 p_i is a high-speed playback time period after an end of the i-th call [sec].

9. The mobile terminal of Claim 6, wherein
the predetermined formula used by the calculation subunit
is

25 [formula 1]

$$x_n = x_0 + \frac{1}{t_R} \sum_{i=1}^n (x_0(t_i + p_i - 1) - x_i - 1 p_i - 1), \text{ where}$$

x_n is a reading speed at which the output subunit reads the video data from the memory after an end of a number of n calls [frame/sec],

5 x_0 is a number of frames to be played back per second at the standard playback speed, i.e. a reading speed at which the video data to be read from the memory [30 fps],

t_R is a specified remaining high-speed playback time period (a chasing playback time period) [sec],

10 t_i is a duration of an i-th call [sec], and

p_i is a high-speed playback time period after an end of the i-th call [sec].

10. The mobile terminal of Claim 4, wherein

15 the high-speed playback subunit includes a calculation subunit operable to receive a remaining playback time period from the user, and calculate, based on a predetermined formula, a playback speed indicating a number of frames to be played back per second, and

20 the high-speed playback subunit reads the broadcast data from the memory, and plays back the read broadcast data at the calculated playback speed.

11. The mobile terminal of Claim 10, wherein

25 when another incoming call is received during the playback or when another call starts, the playback unit interrupts the playback,

the calculation subunit recalculates a playback speed based on the predetermined formula, and
an output subunit outputs the recorded broadcast data from an interrupted part, to a monitor at the re-calculated playback
5 speed.

12. The mobile terminal of Claim 11, wherein
the predetermined formula used by the calculation subunit
is
10 [formula 1]

$$x_n = x_0 + \frac{1}{t_R} \sum_{i=1}^n (x_0(t_i + p_i - 1) - x_i - 1 p_i - 1), \text{ where}$$

x_n is a reading speed at which the output subunit reads the video data from the memory after an end of a number of n calls [frame/sec],

15 x_0 is a number of frames to be played back per second at the standard playback speed, i.e. a reading speed at which the video data to be read from the memory [30 fps],

t_R is a specified remaining high-speed playback time period (a chasing playback time period) [sec],

20 t_i is a duration of an i-th call [sec], and

p_i is a high-speed playback time period after an end of the i-th call [sec].

13. The mobile terminal of Claim 10, wherein
25 the predetermined formula used by the calculation subunit
is

[formula 1]

$$x_n = x_0 + \frac{1}{t_R} \sum_{i=1}^n (x_0(t_i + p_i - 1) - x_i^{-1} p_i - 1), \text{ where}$$

x_n is a reading speed at which the output subunit reads the video data from the memory after an end of a number of n calls [frame/sec],

x₀ is a number of frames to be played back per second at the standard playback speed, i.e. a reading speed at which the video data to be read from the memory [30 fps],

t_R is a specified remaining high-speed playback time period 10 (a chasing playback time period) [sec],

t_i is a duration of an i-th call [sec], and

p_i is a high-speed playback time period after an end of the i-th call [sec].

15 14. The mobile terminal of Claim 4, wherein when broadcasting of the broadcast program being played back ends, the recording unit stops recording the broadcast program.

20 15. The mobile terminal of Claim 4, wherein when the playback of the recorded broadcast data by the second playback subunit or the high-speed playback subunit catches up with the real-time broadcast, or when broadcasting of the broadcast program being played back ends during the 25 playback of the recorded broadcast data by the standard playback subunit, the recording unit stops recording the broadcast program.

16. The mobile terminal of Claim 3, wherein
the playback unit further includes a second playback
subunit operable, when the specification of the playback speed
5 is not received, to play back the recorded broadcast data at
a default playback speed suitable for hearing audio.

17. The mobile terminal of Claim 16, wherein
the second playback subunit plays back the recorded
10 broadcast data at a playback speed within a range from 1.0 time
to 2.0 times the standard playback speed.

18. The mobile terminal of Claim 17, wherein
when the playback of the recorded broadcast data by the
15 second playback subunit or the high-speed playback subunit
catches up with the real-time broadcast, or when broadcasting
of the broadcast program being played back ends during the
playback of the recorded broadcast data by the standard playback
subunit, the recording unit stops recording the broadcast
20 program.

19. A method for recording and playing back a broadcast program
in a mobile terminal having a broadcast program receiving
function in addition to a communication function, the method
25 comprising the steps of:

recording, when playback of a broadcast program being
received is disabled by the communication function, the broadcast
program in the memory as broadcast data, the communication

function having priority over the playback; and
playing back, when the disabled playback changes to be
enabled, the broadcast data.

5 20. A program for recording and playing back a broadcast
program applied to a mobile terminal having a broadcast program
receiving function in addition to a communication function,
wherein

the program causes a computer to execute the steps of:
recording, when playback of a broadcast program being
received is disabled by the communication function, the broadcast
program in the memory as broadcast data, the communication
function having priority over the playback; and

10 playing back, when the disabled playback changes to be
enabled, the broadcast data.